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| **Unit and Title of Lesson: Grade 11 Biology – Evolution… Darwin’s Finches and Natural Selection** | | | |
| **Curriculum Connections**   |  |  | | --- | --- | | **Materials**   * Computer/projector * Tongue Depressors * Elastic Bands * Screws * Bowls/food pans * 4 types of ‘food’ (Styrofoam, packing noodles… etc) | **Include in Appendix**  **I.** Chalkboard Plan  **II.** Pictures for projector  **III.** Teacher’s Notes andStudent Activity Handouts |   **Big Ideas**   * Evolution is the process of biological change over time based on the relationships between species and their environments * The theory of evolution is a scientific explanation based on a large accumulation of evidence   **Overall Expectations: C2.** investigate evolutionary processes, and analyze scientific evidence that supports the theory of evolution **C3.** demonstrate an understanding of the theory of evolution, the evidence that supports it, and some of the mechanisms by which it occurs.  **Specific Expectations: C2.1.** use appropriate terminology related to evolution [C]; **C3.1.** explain the fundamental theory of evolution, using the evolutionary mechanism of natural selection to illustrate the process of biological change over time  **Learning Goals… Students will:**   * state Darwin’s Theory of Evolution * determine the mechanism behind how Darwin’s Finches evolved their physical differences * understand Natural Selection, as Darwin observed it in the finches   **Prior Knowledge:**   * basic knowledge about the history of evolution, and theories that arose before Darwin’s introduction of Natural Selection | | | |
| Time: 15 minutes | **Write Agenda on the Board *AND* Learning Goals for the day** (chalkboard outline)  **Before: Minds On**  **Think-pair-share**: What do you think evolution is? How does it work?   * Class discussion, teacher puts answers from class up on board (point form) – ask questions to clarify as necessary * Do all of our answers seem correct? Ask class as a whole. * Tell students: ‘We will *come back to these answers* at the end of class, to check and see if we’re right’. | **Rationale for choice of T/L Strategy:**   * Clarify the Action/Task * Assesses prior knowledge and readiness, assessment for learning * Allows gradual recall of information * Allow teacher to identify and challenge student misconceptions * Allows peers to share thoughts and co-create possible answers * Make connections between prior knowledge and new knowledge that is to be learned * Will challenge student preconceptions (or validate) by returning to these explanations and thoughts at the end of class | **Assessment Strategies:** Assessment for Learning (diagnostic – what do students already know/think they know), A as L – students have opportunity to challenge their own thinking |
| **Time: 45 minutes** | **Short lecture presentation with supplemental pictures:**  **During: New Concept**  *(10 min)*   * Short history of Darwin (how he ended up on the *HMS Beagle*) * Case study: Darwin’s Finches – describe his observations * Describe Theory of Evolution and the role of Natural Selection   **Investigate Natural Selection**  *(30 min)*   * Activity – ‘Birds, Beaks and Natural Selection’ (Notes in Appendix) * Students discuss the questions with their group (chose one ‘writer’ to record answers) – collected data answers handed in at end of activity   **Quick Class Discussion** *(5 min)*   * What were our primary observations? * Define Evolution! | **Rationale for choice of T/L Strategies:**   * Allows teacher chance to provide short introduction to topic of Darwin and his Finches * Allow students to construct new knowledge through hands-on investigation * Allow teacher time to interact with students, differentiate and assess for learning * Allow students to communicate and discuss * Allow students to support each other * Allow students to develop concepts using higher order thinking skills | **Assessment Strategies:** A for L – collect answers to activity’s questions to assess basic understanding, A as L – students question their own thinking about evolution  **Differentiated Instruction:** visual presentation, hands-on activity, within groups (verbal discussion and written answers) |
| **Time: 10 minutes** | **Were we right?**  **After: Consolidation**  **& Connection**   * Return to list on board generated by students * Were their preconceptions correct? What could be refined? * Do students feel they have achieved the lesson’s learning goals? | **Rationale for choice of T/L Strategy:**   * Allow teacher to challenge student misconceptions * To allow students to recall and review learning highlights to increase retention * To assess for learning for Next Steps * Assessment as learning to ensure Learning Goals have been achieved |
| **Time: 5 minutes** | **Home-fun (and remainder of class)**:  **Next Steps**     * Assign two thought-questions on evolution and natural selection   *1. How might humans direct evolution to get the traits they want in animals such as dogs?*  *2. What role might genetics have in evolution?* | **Rationale for Choice of T/L Strategy:**   * Assessment as learning and reflect on learning * To allow students to practice summarizing information |

**Before: Minds On**